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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CLIFFORD CHARLES BAMPTON
and KUNAG-TSAN K. CHIANG

Appeal 2009-007048
Application 10/732,882
Technology Center 1700

Before MICHAEL P. COLAIANNI, CHUNG K. PAK, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL¹

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 3, 18 through 34, 43 through 47. Claims 11 through 17 and 35 through 42, the other claims pending in

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

this application, stand withdrawn from consideration by the Examiner. We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal is directed to, inter alia, an alloy. Claim 1 is illustrative:

1. An alloy in metal matrix composite construct having a high burn and oxidation resistance consisting essentially of:
about 2.5 to about 6 weight percent aluminum;
about 30 to about 50 weight percent of nickel;
about 3 to 30 weight percent of zinc; and
the balance copper.

The Examiner maintains the following rejections:

1) Claims 20 and 47 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement;

2) Claims 1-3, 18-34, and 43-47 under 35 U.S.C. § 103(a) over Kondoh (US 5,972,070, issued Oct. 26, 1999);

3) Claims 1-3, 18-34, and 43-46 under 35 U.S.C. § 103(a) over Takagi (US 5,004,581, issued Apr. 2, 1991); and

4) Claims 18-34 under 35 U.S.C. § 103(a) over Akutsu (US 5,114,468, issued May 19, 1992).

With respect to rejection (1), we address the rejection with respect to claims 20 and 47, as argued by Appellants. *See* 37 C.F.R. § 41.37(c)(1)(vii).

With respect to rejection (2), Appellants argue the claims in four groups: (1) claims 1, 18, and 43; and (2) claim 26; (3) claim 27; and (4)

claim 47. (App. Br.² 4-6 and Reply Br. 1-3). We address Appellants' arguments regarding the rejection with respect to every claim in each claim group, as argued by Appellants. *See* 37 C.F.R. § 41.37(c)(1)(vii).

With respect to rejection (3), Appellants argue the claims in two groups: (1) claims 1, 18, and 43; and (2) claim 27. (App. Br. 4-6 and Reply Br. 1-3). We address Appellants' arguments regarding the rejection with respect to every claim in each claim group, as argued by Appellants. *See* 37 C.F.R. § 41.37(c)(1)(vii).

With respect to rejection (4), we address the rejection with respect to claims 18, 26, and 27 only, as argued by Appellants. (App. Br. 7 and Reply Br. 1-3). *See* 37 C.F.R. § 41.37(c)(1)(vii).

REJECTION (1)

ISSUE

Did the Examiner err in finding that the later claimed limitation "up to about 7 weight percent" recited in claims 20 and 47 was not described in the originally filed disclosure within the meaning of 35 U.S.C. § 112, first paragraph? We decide this issue in the affirmative.

FINDINGS OF FACT (FF)

1. The Specification discloses that "small amounts of silicon, chromium, and titanium may . . . be present in the [metal] alloy [i.e., matrix]." (Spec. ¶¶ [0017] and [0015]).

² Our reference to the Appeal Brief is to the Appeal Brief received on January 19, 2009.

2. In a preferred embodiment, the Specification discloses that "[g]enerally, the silicon, chromium, and titanium, alone or in combination, comprise about 2 to about 7 weight percent of the metal alloy." (Spec. ¶ [0017]).
3. The Specification discloses at Tables I and II a preferred metal alloy composition having 5 wt % aluminum and the balance copper. (Spec. ¶¶ [0029]-[0033]).
4. The Specification discloses at Tables I and II another preferred metal alloy composition having, in weight percent, 4.6% nickel, 4% aluminum, 1% silicon, and the balance copper.

Additional findings of fact may appear in the Analysis that follows.

PRINCIPLE OF LAW

As stated in *Ariad Pharms., Inc. v. Eli Lilly and Co.*,

the test for sufficiency [of the written description] is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date. . . .

The term "possession," however, has never been very enlightening. It implies that as long as one can produce records documenting a written description of a claimed invention, one can show possession. But the hallmark of written description is disclosure. Thus, "possession as shown in the disclosure" is a more complete formulation. Yet whatever the specific articulation, the test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed.

598 F. 3d 1336, 1351 (Fed. Cir. 2010) (*en banc*).

ANALYSIS AND CONCLUSION

The Examiner finds that the "up to about 7 weight percent" limitation required by claims 20 and 47 lacks literal support in the written description and therefore contains subject matter that was not described in the Specification in such a way as to reasonably convey to one of ordinary skill that Appellants had possession of the later claimed limitation at the time the application was filed (Ans. 4). We disagree.

The Specification discloses that "*small amounts* of silicon, chromium, and titanium may . . . be present in the alloy," which in one embodiment may include silicon, chromium, and titanium, alone or in combination, comprise about 2 to about 7 weight percent of the metal alloy. (FF 1 and 2).

In addition, the Specification at Tables I and II discloses two preferred metal alloy compositions: one having 5 wt % aluminum and the balance copper and the other having 4.6 wt % nickel, 4 wt % aluminum, 1 wt % silicon, and the balance copper. (FF 3 and 4). Since each of these preferred metal alloy compositions has a weight percent totaling 100 wt %, each of these preferred metal alloy compositions has 0 wt % silicon, chromium, and/or titanium.

Thus, because the Specification, as originally filed, exemplifies preferred compositions having 0 wt % silicon, chromium, and/or titanium, together with its broad disclosure of metal alloys having *small amounts* of silicon, chromium, and titanium and having silicon, chromium, and titanium, alone or in combination, comprise about 2 to about 7 weight percent of the metal alloy, we find that one of ordinary skill in the art reading Appellants' disclosure *as a whole* would have understood Appellants' claimed invention

as including a metal matrix composite material comprising a metal alloy consisting essentially of a material "selected from the group consisting of silicon, chromium, titanium, and combinations thereof, ...present in an amount up to about 7 weight percent" as required by claim 20 or a metal matrix composite consisting of a metal matrix having "up to about 7 weight percent of at least one element selected from silicon, chromium, titanium, and combinations thereof" as required by claim 47. *See Ariad*, 598 F.3d at 1351; *In re Wertheim*, 541 F.2d 257, 265 (CCPA 1976)(the disclosure of a range of an ingredient, together with specific examples showing specific amounts of the same, can provide written descriptive support for a new range of the same under 35 U.S.C. 112, first paragraph). Contrary to the Examiner's position (Ans. 4), literal support for the claim features are not required.

Therefore, it follows that the Examiner erred in finding that the later claimed limitation "up to about 7 weight percent" recited in claims 20 and 47 was not described in the originally filed disclosure within the meaning of 35 U.S.C. § 112, first paragraph.

Accordingly, we reverse the Examiner's § 112, first paragraph, rejection of claims 20 and 47 as failing to comply with the written description requirement.

Rejections (2) and (3)

ISSUE

Did the Examiner err in determining that Kondoh and Takagi individually would have rendered obvious the inventions recited in claims 1,

18, and 43 within the meaning of § 103? We decide this issue in the negative.

PRINCIPLES OF LAW

When a claim employs the transitional term "comprising," it is interpreted as not precluding the presence of additional ingredients and/or steps, which are not recited. *In re Baxter*, 656 F.2d 679, 686-87 (CCPA 1981).

When a claim employs the limitation "consisting of," it is interpreted as excluding any additional ingredients and/or steps not specified in the claim. *In re Gray*, 53 F.2d 520, 521-22 (CCPA 1931).

"[T]he phrase 'consisting essentially of' limits the scope of a claim to the specified ingredients and those that do not materially affect the basic and novel characteristic(s) of a composition." *In re Herz*, 537 F.2d 549, 551-52 (CCPA 1976) (emphasis omitted) (quoting *In re Janakirama-Rao*, 317 F.2d 951 (CCPA 1963)). Appellants have the burden of showing that the additional ingredients taught by the prior art reference affect the basic and novel characteristic of the claimed invention. *See In re De Lajarte*, 337 F.2d 870, 873-74 (CCPA 1964).

"In cases involving overlapping ranges, we and our predecessor court have consistently held that even a slight overlap in range establishes a *prima facie* case of obviousness." *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003).

"[A] *prima facie* case of obviousness exists when the claimed range and the prior art range do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties." *In*

re Peterson, 315 F.3d 1325, 1329 (Fed. Cir. 2003) (emphasis omitted); *see also Titanium Metals v. Banner*, 778 F.2d 775, 783 (Fed. Cir. 1985).

As stated in *Ex parte Obiaya*:

The test of obviousness under 35 U.S.C. § 103 is not the express suggestion of the claimed invention in any or all of the references, but what the references taken collectively would suggest to those of ordinary skill in the art presumed to be familiar with them. . . . The fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious.

227 USPQ 58, 60 (BPAI 1985).

ANALYSES, FINDINGS, AND CONCLUSIONS

We adopt the Examiner's findings in the Answer and Final Office Action as our own, except for those findings that we expressly overturn or set aside in the Analysis that follows.

Rejections (2) and (3): claims 1, 18, and 43

Appellants argue that the transitional phrase "consisting essentially of" recited in claims 1, 18, and 43 excludes unclaimed ingredients, such as Takagi's iron and Kondoh's lead, because they would change the fundamental character of Appellants' composition, which is burn and oxidation resistance. (App. Br. 4). Specifically, Appellants argue that the Takagi's and Kondoh's additional ingredients would change the fundamental character of Appellant's composition "[since Takagi's] iron (Fe) contributes to dispersion strengthening . . . [and Kondoh's] element lead (Pb) . . . influences lubricity." (App. Br. 4).

In addition, Appellants rely on the Sinclair article as evidence to show that "[t]he additional elements iron (Fe) and lead (Pb) that are present in the compositions of Takagi or Kondoh are detrimental to burn resistance Therefore . . . inclusion of iron (Fe) and lead (Pb) into the claimed composition would materially change the burn characteristics." (App. Br. 4-5).

It is well settled that "the phrase 'consisting essentially of' limits the scope of a claim to the specified ingredients and those that do not materially affect the basic and novel characteristic(s) of a composition." *See Herz*, 537 F.2d at 551-52. In addition, Appellants have the burden of showing that the additional ingredients taught by the prior art reference affect the basic and novel characteristics of the claimed invention. *See De Lajarte*, 337 F.2d at 873-74.

In our case, the Specification discloses that "[t]he present invention relates to metal matrix composites . . . that exhibit high strength, good burn resistance, and good resistance to high temperature oxidation." (Spec. ¶ [0014]).

Thus, any additional ingredients not recited in claims 1, 18, and 43 that do not materially affect such basic and novel characteristic (i.e., good burn and oxidation resistance) are not excluded by the transitional phrase "consisting essentially of."

Therefore, while Takagi teaches (Takagi, col. 3, ll. 31-45) that its iron contributes to providing a dispersion strengthened copper alloy and Kondoh teaches (Kondoh, col. 3, ll. 50-55 and col. 9, ll. 28-46) that its lead influences the lubricity of the copper alloy, Appellants do not direct us to any credible evidence or provide any persuasive explanation to show that

Kondoh's lead or Takagi's iron materially affects the basic and novel characteristics of the alloy required by claims 1, 18, and 43 (i.e., good burn and oxidation resistance). Appellants also have not persuasively explained or directed us to any credible evidence that establishes the content of Kondoh's lead or Takagi's iron results in an alloy in metal matrix composite construct having a high burn and oxidation resistance as required by the subject matter of claim 1, 18, or 43.

Indeed, Kondoh teaches using lead powder in an amount ranging from 0.5 to 3 wt % in its copper alloy. (Kondoh, col. 3, ll. 50-55). Takagi teaches using iron in an amount ranging from 4 to 30 wt % in its copper alloy. (Takagi, col. 3, ll. 34-39). Appellants have not shown how the use of any of the disclosed amounts of lead and copper, including the amounts toward the lower limits of either ranges, affects the basic and novel characteristics of the alloy required by claims 1, 18, and 43. Accordingly, Appellants' arguments are unpersuasive of reversible error.

With respect to Appellants' reliance (App. Br. 4) on the Sinclair article as evidence to show that "[t]he additional elements iron (Fe) and lead (Pb) that are present in the compositions of Takagi or Kondoh are detrimental to burn resistance." While the Sinclair article shows that *elemental* iron and *elemental* lead individually have a low threshold pressure, which is said to indicate poor burn resistance, Appellants have not alleged, much less shown, how the *addition* of the elemental iron or elemental lead, in the amounts disclosed by Takagi and Kondoh, to any of the alloys required by claims 1, 18, and 43 materially affects their basic and novel characteristics.

Indeed, as correctly stated by the Examiner, "[A]ppellants fail to provide factual evidence to substantiate their position that *adding* iron to

[the] *claimed composition* would materially influence burn resistance."

(Ans. 10) (emphasis added).

Thus, it follows that the Examiner did not err in determining that Kondoh and Takagi individually would have rendered obvious the inventions recited in claims 1, 18, and 43 within the meaning of § 103.

Accordingly, we sustain the Examiner's decision to reject claims 1-3, 18-25, and 43-46 under 35 U.S.C. § 103(a) over Kondoh and claims 1-3, 18-26, and 43-46 under 35 U.S.C. § 103(a) over Takagi.

Rejection (2): Claim 26

Appellants argue that "in the composition of Kondoh, the hard particles are the reinforcing agent . . . [t]herefore, interpreting the matrix as a reinforcing agent is contrary to the explicit teachings of the Kondoh reference." (App. Br. 5). In addition, Appellants argue that "[t]he matrix of Kondoh is neither an additive nor a reinforcement to another material. In fact, hard particles are added to the matrix to reinforce the matrix." (App. Br. 6).

The Examiner, however, relies on Kondoh's hard particles and not on Kondoh's matrix to meet the reinforcing agent feature required by claim 26. In this regard, the Examiner finds and Appellants do not specifically dispute that "the claimed about 55 volume percent reinforcing agent . . . has about 32.8 wt.% according to [the Examiner's] calculation. Kondoh discloses *hard particles* [in the range of] 10-30 wt.%" (*Compare* Ans. 11 with App. Br. 4-6 and Reply Br. 2-3) (footnote omitted) (emphasis added).

Thus, since the claimed reinforcing agent's lower portion of the range (i.e., "about 55 to about 85 volume percent"), which is calculated to have a

lower limit of about 32.8 wt %, is close to the upper portion of Kondoh's range (i.e., 10-30 wt %), a person of ordinary skill would have reasonably expected that the properties achieved by using slightly more hard particles than the particles range disclosed by Kondoh would have been the same or similar to those imparted by the claimed range. Consequently, it would have been obvious to one of ordinary skill to employ an amount of hard particles (reinforcing agent) within the claimed range. *See Peterson*, 315 F.3d at 1329; *see also Titanium*, 778 F.2d at 783.

Appellants argue that the Examiner has not provided any evidentiary support that Kondoh's disclosed range is so close to the claimed range that one of ordinary skill in the art would view these values as being substantially identical (Reply Br. 2). Appellants further argue that having almost 3 wt.% more of the reinforcing agent would appear to provide a greater reinforcing effect than the range in the cited references (Reply Br. 2).

However, in reference to our above discussion, the Examiner's evidence is based on the fact that the claimed range is close to the range disclosed by Kondoh. In other words, the proximity of the lower limit of the claimed range and the upper limit of Kondoh's range of reinforcing agent are close enough such that one of ordinary skill would have expected them to have the same properties.

Thus, the burden shifted to Appellants to produce evidence to rebut that prima facie case. Appellants' mere argument that 3 wt.% more of the reinforcing agent would appear to have a greater reinforcing effect than the range in the cited references is insufficient to rebut the Examiner's prima facie case.

Accordingly, we sustain the Examiner's decision to reject claim 26 under 35 U.S.C. § 103(a) over Kondoh.

Rejections (2) and (3): Claim 27

Appellants argue that

[t]he burden is on the Examiner to establish inherency, and the burden is on the Examiner to show that the reference compositions would inevitably or invariably always have the claimed burn resistance. In this case, as evidenced by the Sinclair article discussed above, not all compositions are burn resistant. Therefore, the reference compositions would not automatically have the claimed burn resistance.

(App. Br. 6).

With respect to the Appellants' argument that "the burden is on the Examiner to show that the reference compositions . . . have the claimed burn resistance," in reference to our above discussion, the Examiner determines and Appellants do not specifically dispute that since Kondoh and Takagi individually teach metals having amounts in ranges that *overlap* the ranges of the same metals described in Appellants' Specification, it would have been obvious to arrive at the alloy composition having amounts of metals within the ranges described in Appellants' specification. (*Compare* Ans. 6 with App. Br. 6 and Reply Br. 1-3; *see* Spec. ¶ [0017] and Table 1; *see also* *Peterson*, 315 F.3d at 1330). Thus, it would have been obvious to a person of ordinary skill in the art following the teachings of Kondoh and Takagi to arrive at a metal composition having components in amounts specified by the claims. As such, the claimed property (i.e., the threshold burn resistance required by claim 27) would have naturally flowed from following the

suggestion of Kondoh and Takagi. *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Int. 1985).

Accordingly, we sustain the Examiner's decision to reject claims 27-34 under 35 U.S.C. § 103(a) over Kondoh and claims 27-34 under 35 U.S.C. § 103(a) over Takagi.

Rejection (2): Claim 47

Appellants argue that "[t]he Examiner does not appear to have considered that the 'consisting of' language closes the claim to the specified elements except for impurities ordinarily associated therewith." (App. Br. 6). Thus, it appears that Appellants argue that Kondoh's additional metals (e.g., Kondoh's elemental lead) are excluded by Appellants' "consisting of" limitation recited in claim 47. We disagree.

As is apparent from claim 47, the transitional phrase "consisting of" limits the claimed metal matrix composite to the metal matrix and reinforcing fibers recited in claim 47. Appellants, by virtue of employing the phrase "having" in claiming the metal matrix permit the presence of the additional, unrecited metals to be part of the metal matrix that compose the claimed metal matrix composite.

Thus, we concur with the Examiner that claim 47, as a whole, does not exclude Kondoh's additional metals (e.g., Kondoh's elemental lead).

Accordingly, we sustain the Examiner's decision to reject claim 47 under 35 U.S.C. § 103(a) over Kondoh.

Rejection (4)

Claims 18 and 27

With respect to claim 18, Appellants argue that "[Akutsu's] oxygen influences wear resistance by forming hard oxides . . . Appellant's composition is intended for oxidation resistance. Therefore, the oxygen of Akutsu would change the fundamental character of Appellant's composition by promoting rather than resisting oxidation." (App. Br. 7). In reference to our above discussion, Appellants have not shown that Akutsu's oxygen would materially affect the basic and novel characteristics of the alloy (i.e., oxidation resistance) required by claim 18. Accordingly, Appellants' argument is unpersuasive of reversible error.

With respect to claim 27, Appellants argue that the rejection "should be withdrawn for the same reasons stated above under sections II and III." (App. Br. 7). These arguments were not found persuasive for the reasons set forth above in response to the rejections under sections (2) and (3).

Accordingly, we sustain the Examiner's decision to reject claims 18-25 and 27-34 under 35 U.S.C. § 103(a) over Akutsu.

Claim 26

With respect to claim 26, Appellants argue that the "[A]kutsu reference also does not disclose an amount of reinforcing agent that overlaps the claimed amount of reinforcing agent of 'about 55 to about 85 volume percent.' Akutsu discloses at most 15 vol % (col. 1, lines 63-65) of reinforcing agent." (App. Br. 7). We agree.

The Examiner states that "the area ratio recited by Akutsu overlaps the claimed volume ratio." (Ans. 7). However, none of the portions of Akutsu relied upon by the Examiner teaches a volume percent range that overlaps the claimed range of about 55 to about 85 volume percent. Nor does the Examiner explain how any of the portions of Akutsu relied upon by the Examiner teaches a volume percent range that overlaps the claimed range.

Since the Examiner does not direct to our attention or explain how any portion of Akutsu teaches a volume percent range of reinforcing agent that overlaps the claimed range, we reverse the Examiner's decision to reject claim 26 under 35 U.S.C. § 103(a) over Akutsu.

ORDER

In summary,

- 1) The § 112, first paragraph rejection of claims 20 and 47 is reversed;
- 2) The § 103(a) rejection of claims 1-3, 18-34, and 43-47 over Kondoh is affirmed;
- 3) The § 103(a) rejection of claims 1-3, 18-34, and 43-46 over Takagi is affirmed;
- 4) The § 103(a) rejection of claims 18-25 and 27-34 over Akutsu is affirmed; and
- 5) The § 103(a) rejection of claim 26 over Akutsu is reversed.

Accordingly, the decision of the Examiner is affirmed.

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(2009).

AFFIRMED

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